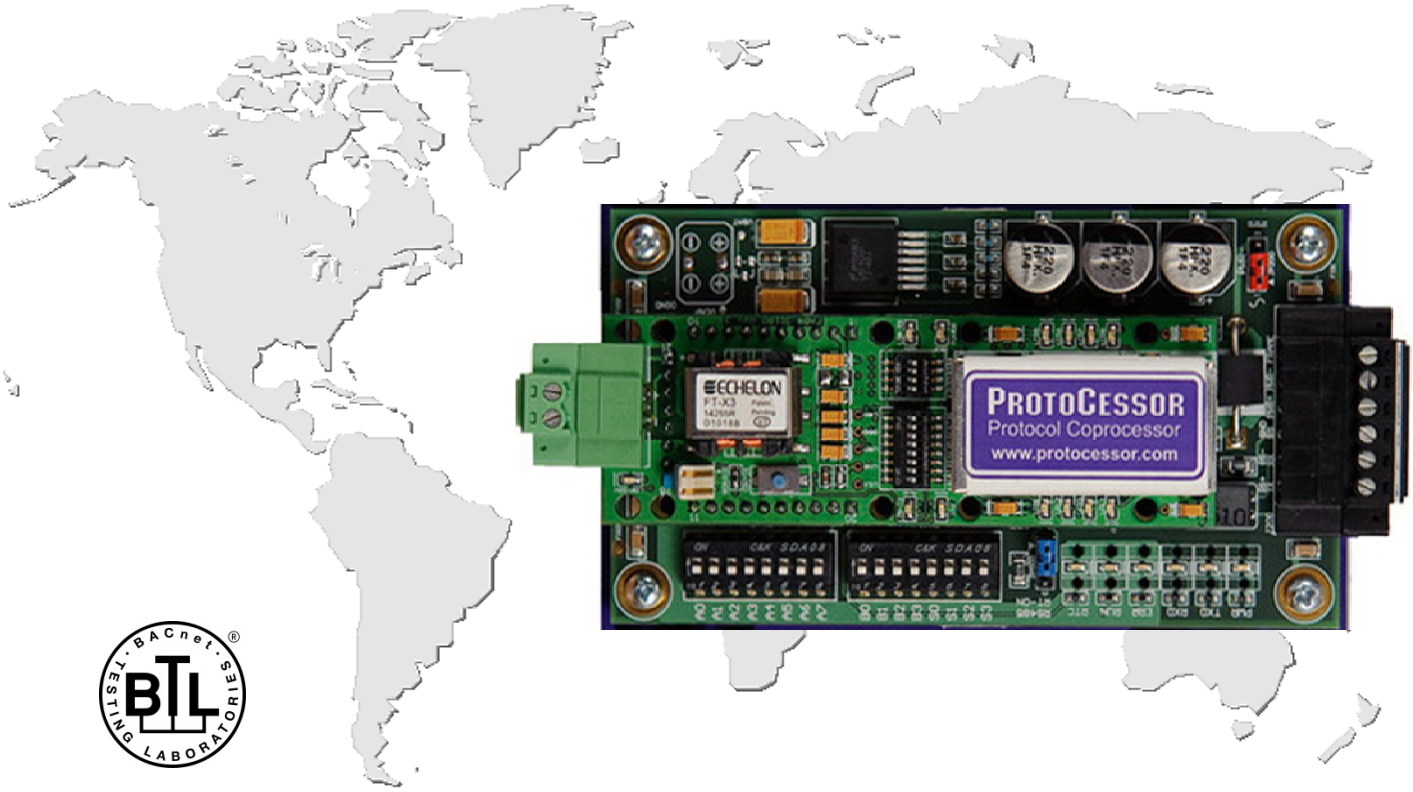
MICRO CONTROL SYSTEMS



MCS-BMS-GATEWAY

STARTUP GUIDE

For Interfacing MCS-MAGNUM To Building Automation Systems Protocols

BACnet MS/TP, Metasys N2 Open, LonWorks

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TABLE OF CONTENTS

1 Introduction 5
1.1 BTL Mark – BACnet Testing Laboratory 5
1.2 LonMark Certification 5

2 Bacnet/LONWorks Setup through Protocessor MCS-BMS-GATEWAY 7
2.1 Installation steps for the customer 7
2.2 Configure the DIP Switches 7
2.2.1 Setting the Node/ID Device Instance (DIP Switch A0 – A7) for BACnet MS/TP, & Metasys N2 7
2.2.2 Setting the Serial Baud Rate (DIP Switch B0 – B3) for BACnet MS/TP & Metasys N2 8
2.2.2.1 Baud Rate DIP Switch Selection 8
2.2.3 Using S0 – S3 bank of DIP Switches to select and load Configuration Files 9
A. LonWorks, BACnet MS/TP and N2 9

3 Interfacing the MCS-BMS-GATEWAY 10
3.1 MCS-BMS-GATEWAY showing connection ports 10
3.2 Wiring the MCS-BMS-GATEWAY to RS-485 Field Protocol ..... **Error! Bookmark not defined.**
3.2.1 Wiring diagram for connecting the MCS-Magnum 11
3.3 Wiring the MCS-BMS-GATEWAY Field Port to a LonWorks network 12
3.4 Power-Up the MCS-BMS-GATEWAY 12
3.5 MCS-MAGNUM Address Settings 13
3.6 Commissioning the MCS-BMS-GATEWAY on a LonWorks network 15

4 CREATING CSV FILES USING MCS-CONFIG 20

5 Install and Run the Utility Software to Setup ip Address for BACnet/IP 16
5.1 Connect the PC to the MCS-BMS-GATEWAY via the Ethernet port 17
5.2 Connect to the MCS-BMS-GATEWAY using RUI (RUInet) 18
5.3 Set IP Address for BACnet/IP 19

Appendix A. Troubleshooting Tips 37
Appendix A.1. Connecting A PC to the MCS-BMS-GATEWAY 37
Appendix A.2. No communication between the MCS-Magnum and the MCS-BMS-GATEWAY 37
Appendix A.3. LED Diagnostics for Lonworks Communications between the MCS-BMS-GATEWAY and device 38
A.2.1 LonWorks ProtoCessor LED's 38
Appendix A.4. LED Diagnostics for Bacnet Communications between the MCS-BMS-GATEWAY and device 40
A.3.1 Bacnet ProtoCessor LED's 40
A.2.3 Main Board LEDs 41

Appendix B. Reference 42
Appendix B.1. Specifications 42
Appendix B.1.1. Compliance with UL Regulations 42
Appendix B.2. Address DIP Switch Settings 43

LIST OF FIGURES

Figure 1: A0 – A7 DIP Switches 7

Figure 2: B0 – B3 DIP Switches 8

Figure 3 Baud Rate Table 8

Figure 4: S0 – S3 DIP Switches 9

Figure 5 Protocol Selection Switch Tables 9

Figure 6: MCS-BMS-GATEWAY 10

Figure 7 Gateway to RS-485 wiring ..... **Error! Bookmark not defined.**

Figure 8 Lonworks network wiring 12

Figure 9 Wiring the power to the MCS-BMS-GATEWAY 12

Figure 10 Service Pin 15

Figure 11 BMS points button 20

Figure 12 The "CREATE MCS-BMS-GATEWAY" button 20

Figure 13 Save As prompt box 21

Figure 14 CSV Files 21

Figure 15: Ethernet port location of MCS-BMS-GATEWAY 17

Figure 16: Ping Utility 18

Figure 17: RUINET screen 18

Figure 18 LonWorks ProtoCessor LED's 38

Figure 19 Main Board LED's 41

1 INTRODUCTION

MCS-BMS-GATEWAY is an external, high performance **Building Automation multi-protocol gateway** that has been preprogrammed to support BACnet®[1]MS/TP, Metasys®[2] N2 by JCI, and LonWorks®[3]. Configurations for the various protocols are stored within the MCS-BMS-GATEWAY and are selectable via DIP switches for fast and easy installation. It is not necessary to download any configuration files to support the required applications.

This document provides the necessary information to facilitate installation of the MCS-BMS-GATEWAY.

1.1 BTL Mark – BACnet Testing Laboratory

The BTL Mark on the MCS-BMS-GATEWAY is a symbol that indicates to a consumer that a product has passed a series of rigorous tests conducted by an independent laboratory which verifies that the product correctly implements the BACnet features claimed in the listing. The mark is a symbol of a high-quality BACnet product. Go to http://www.bacnetinternational.net/btl/ for more information about the BACnet Testing Laboratory.

1.2 LonMark Certification

LonMark International is the recognized authority for certification, education, and promotion of interoperability standards for the benefit of manufacturers, integrators and end users. LonMark International has developed extensive product certification standards and tests to provide the integrator and user with confidence that products from multiple manufacturers utilizing LonMark devices work together. Micro Control Systems has more LonMark Certified gateways than any other gateway manufacturer, including the ProtoCessor, MCS-BMS-GATEWAY sand MCS-BMS-GATEWAY for OEM applications and the full featured, configurable gateways.

[1] BACnet is a registered trademark of ASHRAE
[2] Metasys is a registered trademark of Johnson Controls Inc.
[3] LonMark is a registered trademark of LonMark International
[4] LonWorks is a registered trademark of Echelon Corporation

2 BACNET/LONWORKS SETUP THROUGH PROTOCESSOR MCS-BMS-GATEWAY

2.1 Installation steps for the customer

1. The MCS-BMS-GATEWAY is preprogrammed from factory for the MCS-MAGNUM it will connect to. If you need to create the configuration please see section 4.
2. Set the A, B, and S DIP Switch banks for field protocol baud rate, Node-ID/Device Instance, and proper configuration. (See section 2.2)
3. Connect the MCS-BMS-GATEWAY to the Field protocol port and the MCS-Magnum Ethernet port to the MCS-BMS-GATEWAY Ethernet port. (See Section 0)
4. Power up the MCS-BMS-GATEWAY. After power up, the device is installed on BACnet MS/TP, or Metasys N2 or Lonworks
5. The IP address should already be set , however if an IP address change is required refer to Section 4 to run the RUInet utility program to change the IP address. No changes to the configuration file are necessary.

2.2 Configure the DIP Switches

2.2.1 Setting the Node Address /Device Instance (DIP Switch A0 – A7) for BACnet MS/TP, & Metasys N2

- The A Bank DIP switches on the MCS-BMS-GATEWAY allow users to set the Node address/Device Instance on the RS-485.
- DIP switches A0 – A7 can also be used to set the MAC Address for BACnet MS/TP.

Figure 1: A0 – A7 DIP Switches

- Please refer to Appendix B.2 for the full range of addresses to set Node address/Device Instance.
- For Bacnet MS/TP the device instance is equal to the Node Address (0-127) plus 18100

NOTE: When setting DIP Switches, please ensure that power to the board is OFF.

2.2.2 Setting the Serial Baud Rate (DIP Switch B0 – B3) for BACnet MS/TP & Metasys N2

- DIP Switches B0 – B3 can be used to set the serial baud rate to match the baud rate provided by the Building Management System for BACnet MS/TP.
- Metasys N2 is always defaulted to 9600 baud and the B bank is disabled.

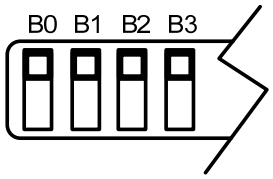


Figure 2: B0 – B3 DIP Switches

2.2.2.1 Baud Rate DIP Switch Selection

Baud	B0	B1	B2	B3
Auto	Off	Off	Off	Off
110	On	Off	Off	Off
300	Off	On	Off	Off
600	On	On	Off	Off
1200	Off	Off	On	Off
2400	On	Off	On	Off
4800	Off	On	On	Off
9600	On	On	On	Off
19200	Off	Off	Off	On
20833	On	Off	Off	On
28800	Off	On	Off	On
38400	On	On	Off	On
57600	Off	Off	On	On
76800	On	Off	On	On
115200	Off	On	On	On

Figure 3 Baud Rate Table

2.2.3 Using S0 – S3 bank of DIP Switches to select and load Configuration Files

- The S bank of DIP switches, S0 - S3 is used to select and load a configuration file from a group of pretested/preloaded configuration files which are stored in the MCS-BMS-GATEWAY (Lonworks, BACnet MS/TP or Metasys N2.

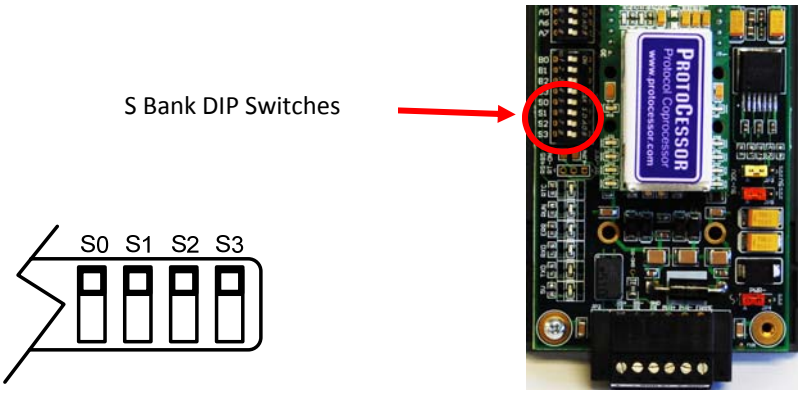


Figure 4: S0 – S3 DIP Switches

A. LonWorks, BACnet MS/TP and N2

The following chart describes S0 - S3 DIP Switch configuration settings for MCS-BMS-GATEWAY to support LonWorks, BACnet® MS/TP and Metasys® N2 by JCI

MCS-BMS-GATEWAY	MCS-BMS-GATEWAY Bank DIP Switches			
Profile – MCS-BMS-GATEWAY RER	**S0**	**S1**	**S2**	**S3**
Lonworks	Off	Off	Off	Off
Bacnet MS/TP	On	Off	Off	Off
N2	Off	On	Off	Off

Figure 5 Protocol Selection Switch Tables

3 INTERFACING THE MCS-BMS-GATEWAY

3.1 MCS-BMS-GATEWAY connection ports

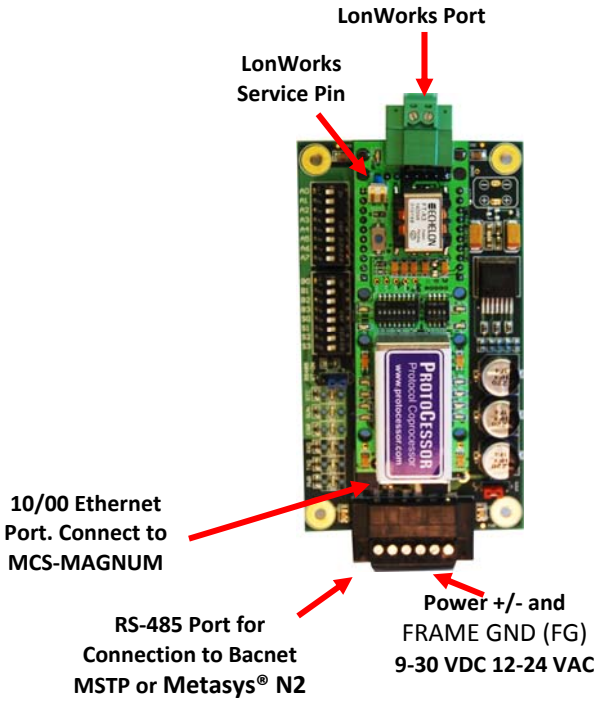
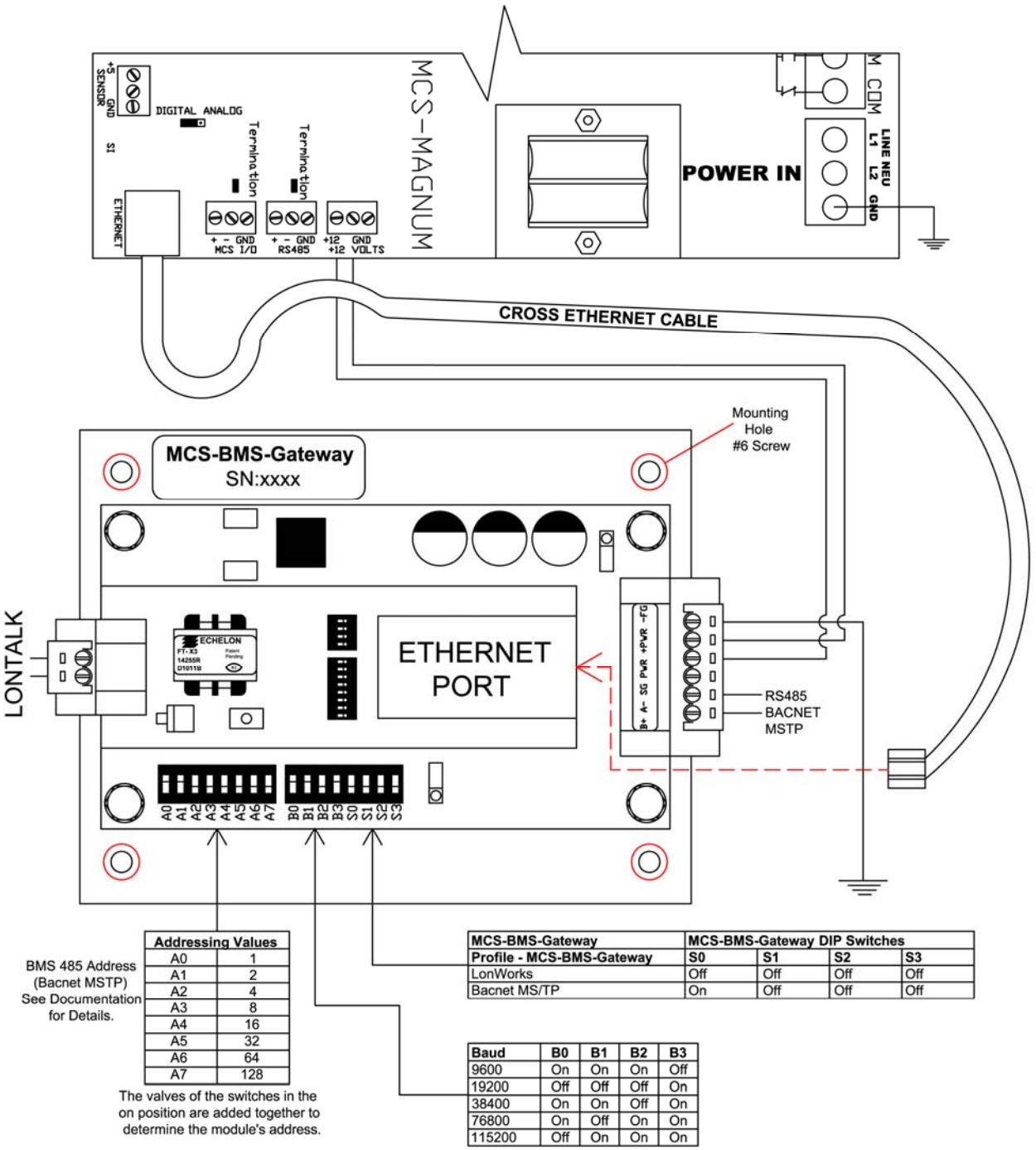

LonWorks Port
LonWorks Service Pin
10/00 Ethernet Port. Connect to MCS-MAGNUM
RS-485 Port for Connection to Bacnet MSTP or Metasys® N2
Power +/- and FRAME GND (FG) 9-30 VDC 12-24 VAC

Figure 6: MCS-BMS-GATEWAY

3.2 Wiring diagram for connecting the MCS-Magnum



BMS 485 Address (Bacnet MSTP) See Documentation for Details.

Addressing Values	
A0	1
A1	2
A2	4
A3	8
A4	16
A5	32
A6	64
A7	128

The valves of the switches in the on position are added together to determine the module's address.

MCS-BMS-Gateway	MCS-BMS-Gateway DIP Switches			
Profile - MCS-BMS-Gateway	S0	S1	S2	S3
LonWorks	Off	Off	Off	Off
Bacnet MS/TP	On	Off	Off	Off

Baud	B0	B1	B2	B3
9600	On	On	On	Off
19200	Off	Off	Off	On
38400	On	On	Off	On
76800	On	Off	On	On
115200	Off	On	On	On

3.3 Wiring the MCS-BMS-GATEWAY Field Port to a LonWorks network

- Connect the MCS-BMS-GATEWAY to the field network with the LonWorks terminal using a twisted pair non-shielded cable. LonWorks has no polarity.

MCS-BMS-GATEWAY Pin #	Pin assignment
Pin 1	Lon +
Pin 2	Lon -

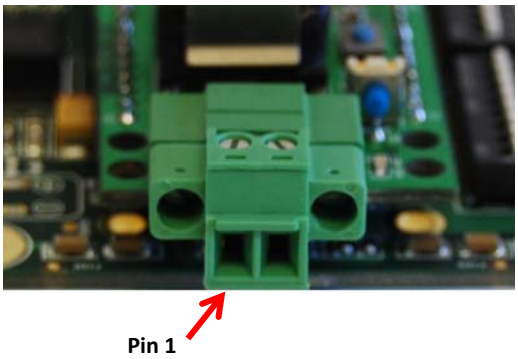


Figure 7 Lonworks network wiring

3.4 Power-Up the MCS-BMS-GATEWAY

Apply power to the device. Ensure that the power supply used complies with the specifications provided in Appendix B.1. Ensure that the cable is grounded using the "Frame-GND" terminal. The MCS-BMS-GATEWAY is factory set for 9-30VDC or 12-24 VAC.

Voltage Pinouts

MCS-BMS-GATEWAY Pin #	Pin assignment
Pin 1	RS-485 +
Pin 2	RS-485 -
Pin 3	RS-485 GND
Pin 4	V +
Pin 5	V -
Pin 6	FRAME GND (FG)

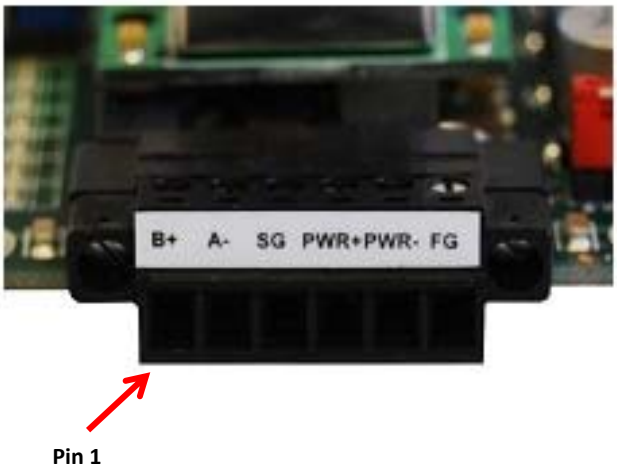
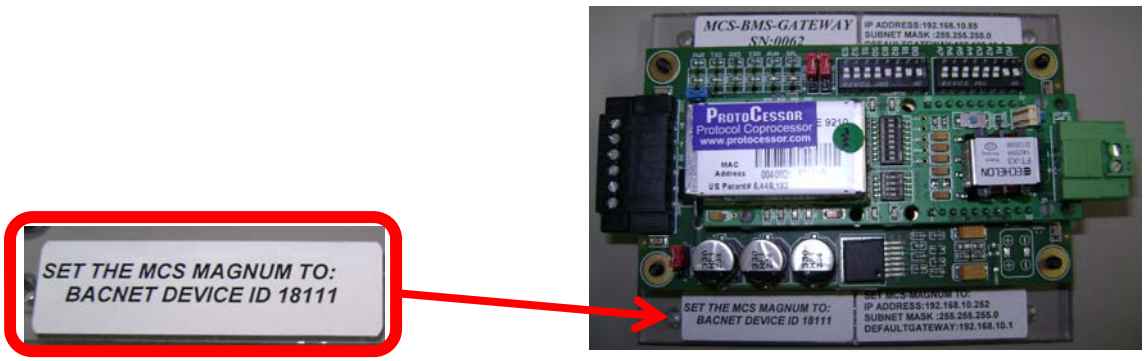


Figure 8 Wiring the power to the MCS-BMS-GATEWAY

3.5 MCS-MAGNUM Address Settings

The MCS-BMS-GATEWAY is connected to the MCS-MAGNUM via Ethernet . The Bacnet Device ID and the IP address of the MCS-MAGNUM must be setup properly to enable successful communications between the MCS-BMS-GATEWAY and the MCS-MAGNUM.

The MCS-MAGNUM BACNET DEVICE ID must be set to the address specified on the MCS-BMS-Gateways label (ex. 18111).



The **MCS-MAGNUM BACNET DEVICE ID** can be verified and changed (with the proper authorization code) from MCS-Magnum's keypad the keypad/LCD of a live unit.

To get authorized on Magnum do the following:

1. Press 'Menu'
2. Using ↑, ↓, →, or ← position curser to 'Passwords'
3. Press ↵ key.
4. Enter 4 digit password & press ↵.
5. Press 'Menu' to make next selection.

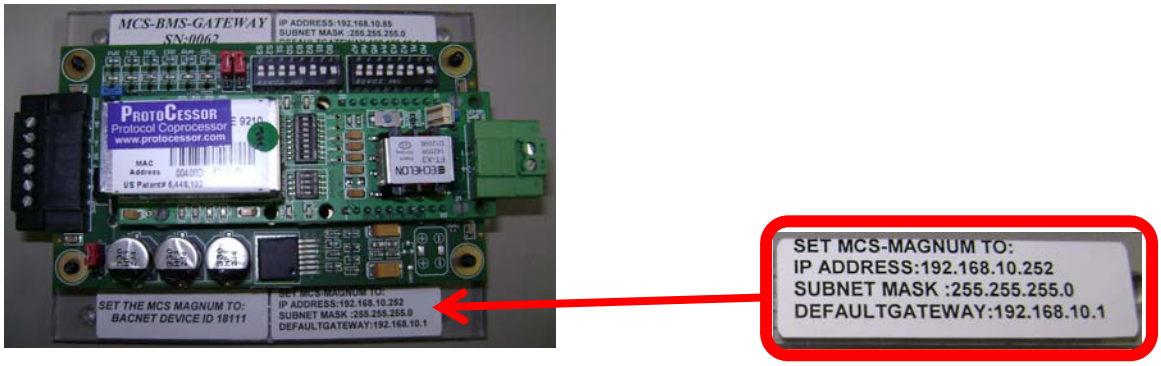
The following steps will display the Bacnet Device ID:

(to change the address you first must be authorized)

1. Press the MENU key and then Using ↑, ↓, →, or ← position curser to Serv Tools then press the ENTER key.
2. then Using ↑, ↓, →, or ← position curser to Bacnet Device ID then press Enter.
3. Use ↑, ↓, curser to change the Bacnet Device ID.
4. Set your desired address then press Enter.
5. Reset or cycle power to the magnum for the change to take effect.

The MCS-MAGNUM IP must be set to the address specified on the MCS-BMS-Gateways label

(ex. 192.168.10.252).



The **MCS-MAGNUM IP address** can be verified and changed (with the proper authorization code) from the MCS-Magnum's keypad/LCD of a live unit.
The following steps will display the IP Address settings:
(to change the address you first must be authorized)

1. Press the MENU key and then Using ↑, ↓, →, or ← position curser to Serv Tools then press the ENTER key.
2. Then Using ↑, ↓, →, or ← position curser to Serv Tools then press Enter.
3. Then Using ↑, ↓, →, or ← position curser to Ethernet Network then press Enter.
4. Then Using ↑, ↓, →, or ← position curser to IP address then press Enter.
5. Using ↑, ↓ to increase and decrease the first set of values then use the → to select the next set of numbers and use ↑, ↓ to increase and decrease the second value and repeat the previous steps for rest of the ip address.
6. Once you have set the desired address press the Enter key.
7. Reset or cycle power to the magnum for the change to take effect.

3.6 Commissioning the MCS-BMS-GATEWAY on a LonWorks network

Commissioning may only be performed by the LonWorks administrator.

To commission the MCS-BMS-GATEWAY LonWorks port, press blue Service Pin to commission the device on a LonWorks network. This pin is located on the small LonWorks MCS-BMS-GATEWAY which sites on top of the base board. See the illustration on the MCS-BMS-GATEWAY where the button is located.

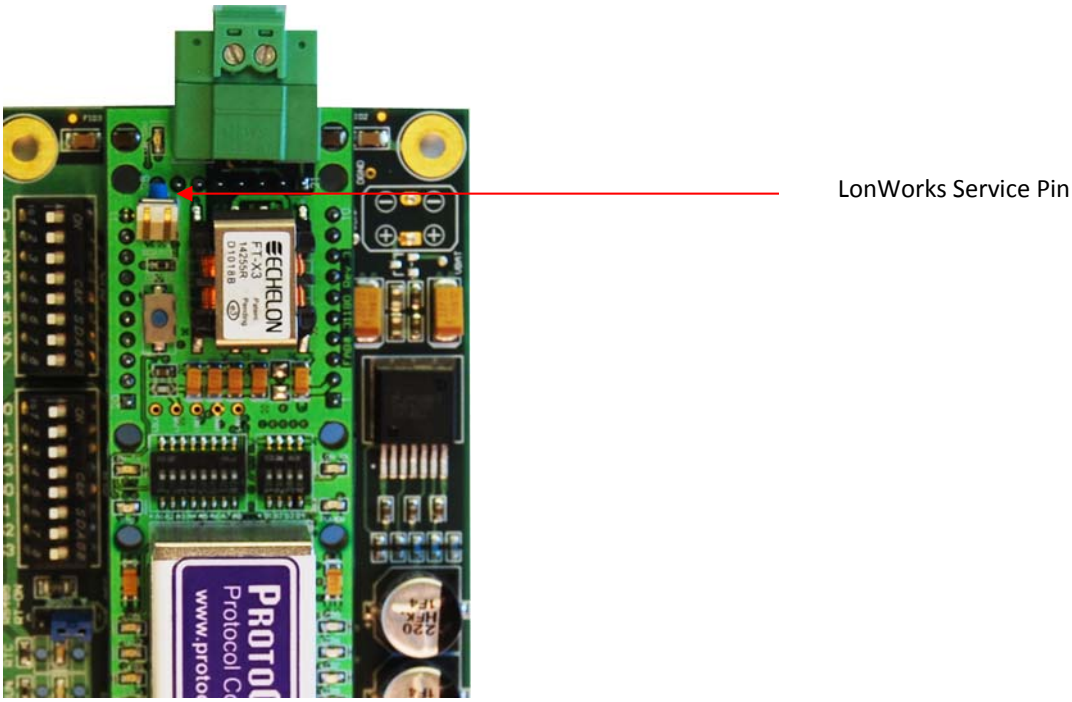


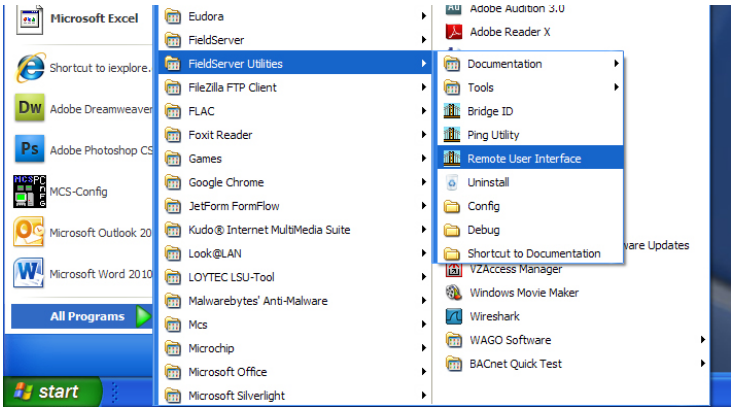
Figure 9 Service Pin

4 INSTALL AND RUN THE UTILITY SOFTWARE TO SETUP IP ADDRESS FOR BACNET/IP

- Download the RUINET Utilities from the MCS website

  http://mcscontrols.com/software.html#mcsBmsGateway Run Install.zip and follow the installation instructions

- Once installed, the FieldServer Utilities can be located in the Windows Start menu as a desktop icon



4.1 Connect the PC to the MCS-BMS-GATEWAY via the Ethernet port

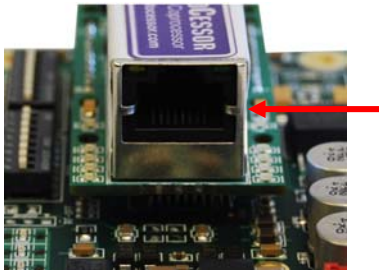


Figure 10: Ethernet port location of MCS-BMS-GATEWAY

- Disable any wireless Ethernet adapters on the PC/Laptop
- Disable firewall and virus protection software
- Connect a crossover cat5 Ethernet cable between the PC and MCS-BMS-GATEWAY
- The MCS Default IP Address of the MCS-BMS-GATEWAY is **192.168.10.85**, Subnet Mask is **255.255.255.0** and **the default gateway 192.168.10.1**. If the PC and the MCS-BMS-GATEWAY are on different IP Networks, assign a static IP Address to the PC on the 192.168.10.xxx network.
- Go to

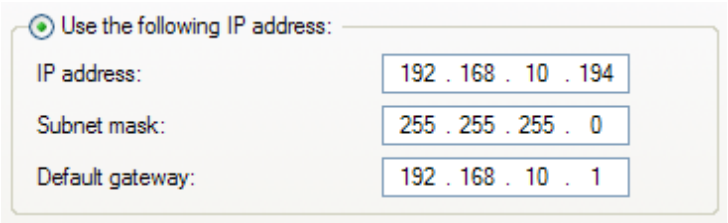
>

>

- Right-click on Local Area Connection > Properties
- Highlight

>

- Select: Use the following IP address and enter an IP address, Subnet mask and default gateway on the same network (ex. See figure below)



- Click

twice
- Go to Start > Programs > Field Server Utilities > Ping Utility
- If the IP Address of the MCS-BMS-GATEWAY module appears on the screen, the MCS-BMS-GATEWAY is running (See Figure 16: Ping utility). If the module does not appear on the Ping Utility we may have an issue with the IP address. If this is the case try the following settings on your PC's local area connection. IP Address **192.168.1.xxx(any available address other then 192.168.1.24)**, Subnet Mask is **255.255.255.0** and **the default gateway 192.168.1.1**.

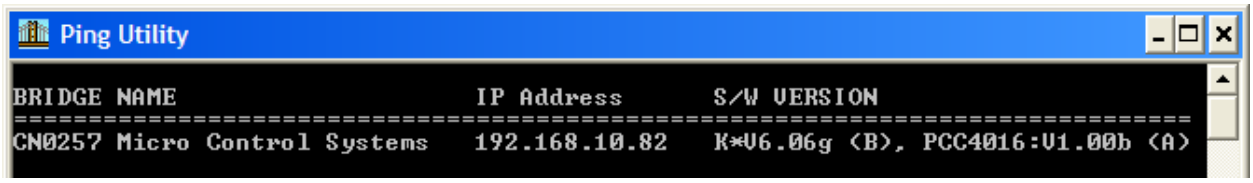


Figure 11: Ping Utility

4.2 Connect to the MCS-BMS-GATEWAY using RUI (RUInet)

- Double click on the debugging utility, "RUINET" (Remote User Interface). The following screen will appear: (if RUInet does not automatically display the main menu, select the MCS-BMS-GATEWAY by typing the 2-digit number to the left of the title name).

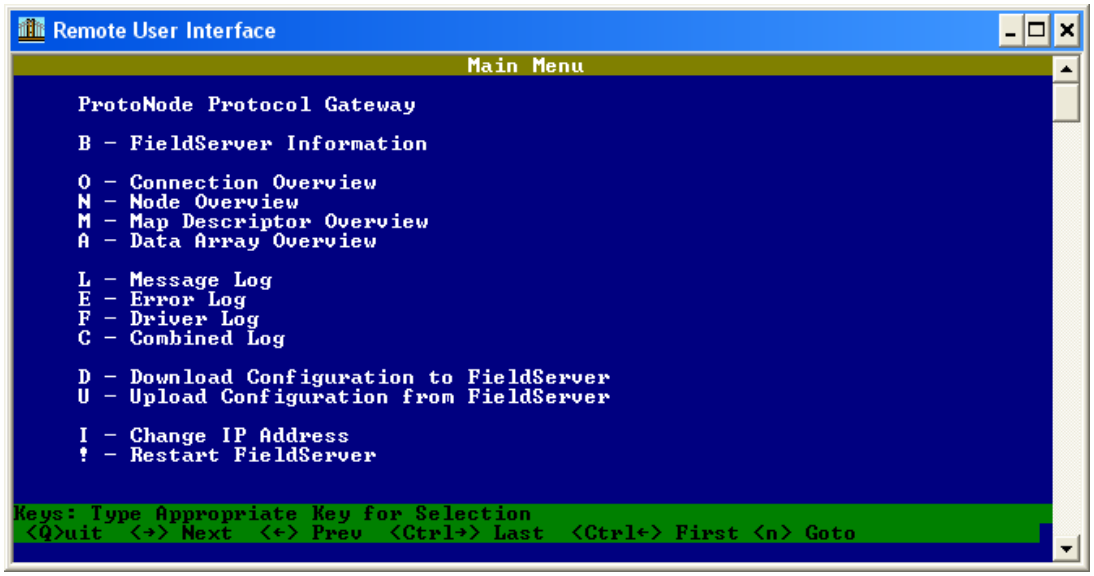

Remote User Interface
Main Menu
ProtoNode Protocol Gateway
B - FieldServer Information
O - Connection Overview
N - Node Overview
M - Map Descriptor Overview
A - Data Array Overview
L - Message Log
E - Error Log
F - Driver Log
C - Combined Log
D - Download Configuration to FieldServer
U - Upload Configuration from FieldServer
I - Change IP Address
! - Restart FieldServer
Keys: Type Appropriate Key for Selection
<Q>uit <→> Next <←> Prev <Ctrl→> Last <Ctrl←> First <n> Goto

Figure 12: RUINET screen

4.3 Set IP Address for BACnet/IP

- From the main menu, press **"I"** to enter the Edit IP Address Settings menu
- Press **"1"** to modify the IP address of the Ethernet adapter
- Type in a new IP address in the format 192.168.10.X and press **<Enter>**
- If necessary, press **"2"** to and change the netmask
- Type in a new Subnet Mask and press **<Enter>**
- If necessary, press **"3"** to and change the IP Gateway
- Type in a new IP Gateway and press **<Enter>**
- Note: If the MCS-BMS-GATEWAY is connected to a router, the IP Gateway of the MCS-BMS-GATEWAY should be set to the IP address of the router that it is connected to
- **Unplug Ethernet cable from PC and connect the MCS-BMS-GATEWAY's ethernet cable to the network switch or router**

5 CREATING CSV FILES USING MCS-CONFIG

The driver configuration file (CONFIG.CSV) for any driver combination ordered is loaded into the MCS-BMS-GATEWAY and can be retrieved using the Remote User Interface Utility.

The configuration file is in comma-delimited format where entries within a line are separated by commas and the end of a line is indicated by an entry without a comma. This file can be edited using spreadsheet programs or any text editor. The following example will walk you through creating csv files for Bacnet MSTP, Lon, and Metasys N2 using the MCS-Config software.

- Open your config file using the latest version of MCS-Config.
- Select the BMS Points button.

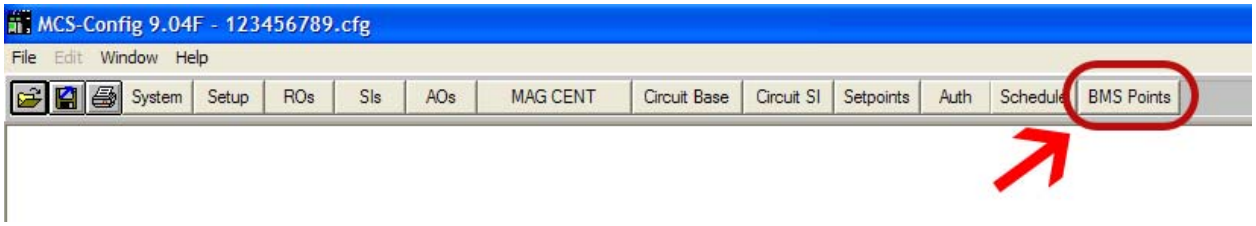

MCS-Config 9.04F - 123456789.cfg
File Edit Window Help
System Setup ROs SIs AOs MAG CENT Circuit Base Circuit SI Setpoints Auth Schedule BMS Points

Figure 13 BMS points button

- Click on the CREATE MCS-BMS-GATEWAY CSV FILES

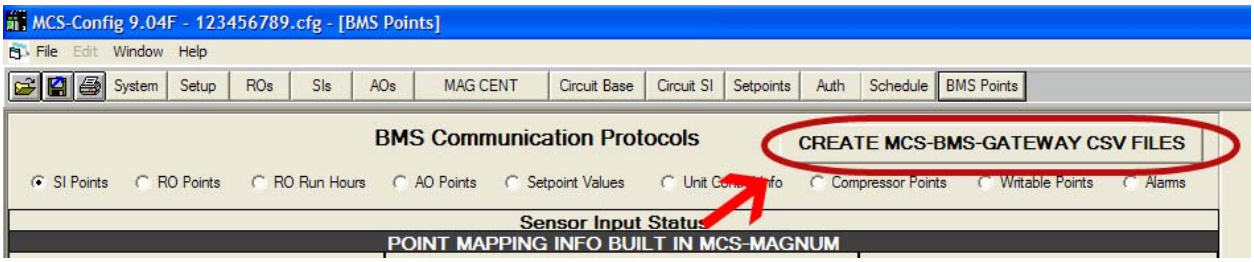

MCS-Config 9.04F - 123456789.cfg - [BMS Points]
File Edit Window Help
System Setup ROs SIs AOs MAG CENT Circuit Base Circuit SI Setpoints Auth Schedule BMS Points
BMS Communication Protocols
CREATE MCS-BMS-GATEWAY CSV FILES
SI Points RO Points RO Run Hours AO Points Setpoint Values Compressor Points Writable Points Alarms
Sensor Input Status
POINT MAPPING INFO BUILT IN MCS-MAGNUM

Figure 14 The "CREATE MCS-BMS-GATEWAY" button

- When you click the CREATE MCS-BMS-GATEWAY CSV FILES you will be prompted with a Save As prompt box. The file will be named automatically. Save it to your desired location.

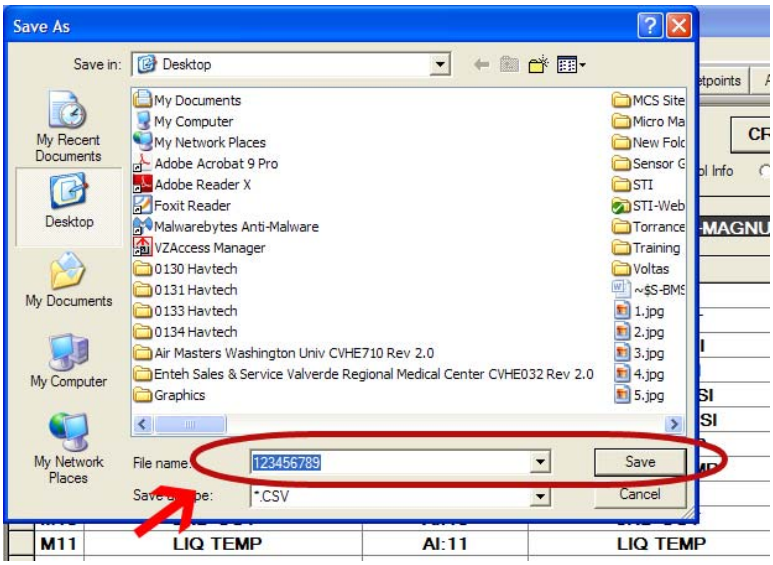


Figure 15 Save As prompt box

- MCS-Config will create three csv files Bacnet, Lontalk, and N2.

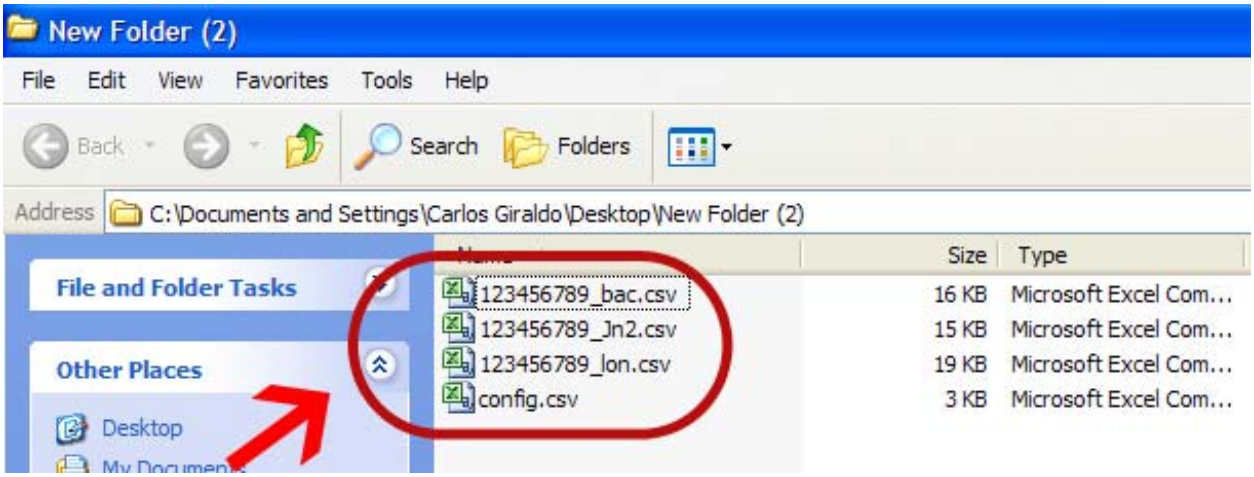
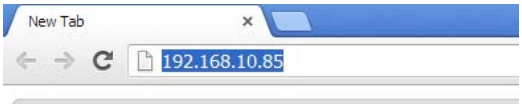


Figure 16 CSV Files

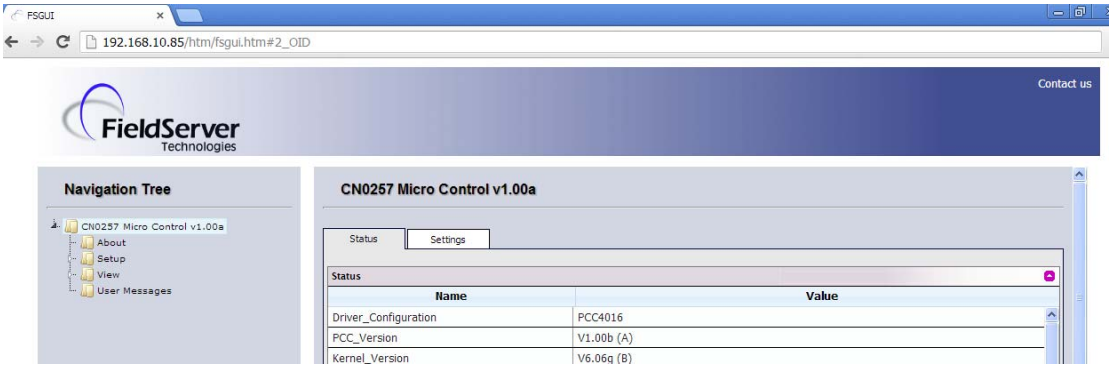
6 PROGRAMMING THE MCS-BMS-GATEWAY WITH THE CSV FILES

Method 1 (Programming the MCS-BMS-GATEWAY Via Compatible Web browser)

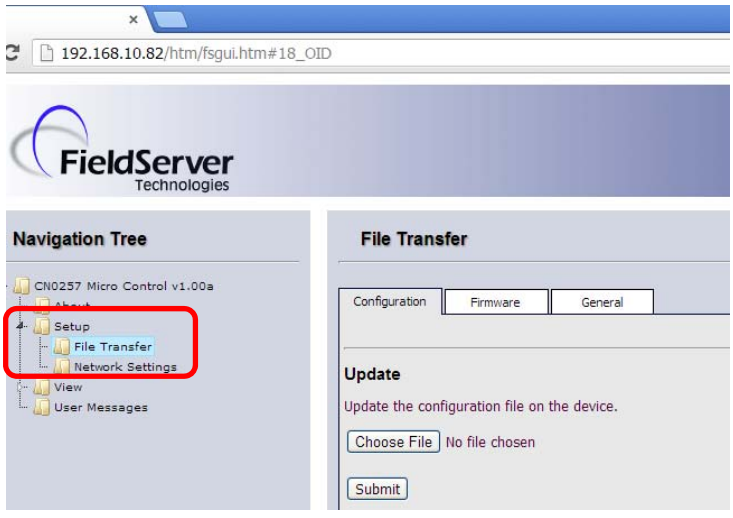
1. Open your web browser. (IE9 or later, Google chrome, or Firefox)
2. Type in the IP address of your MCS-BMS-GATEWAY card



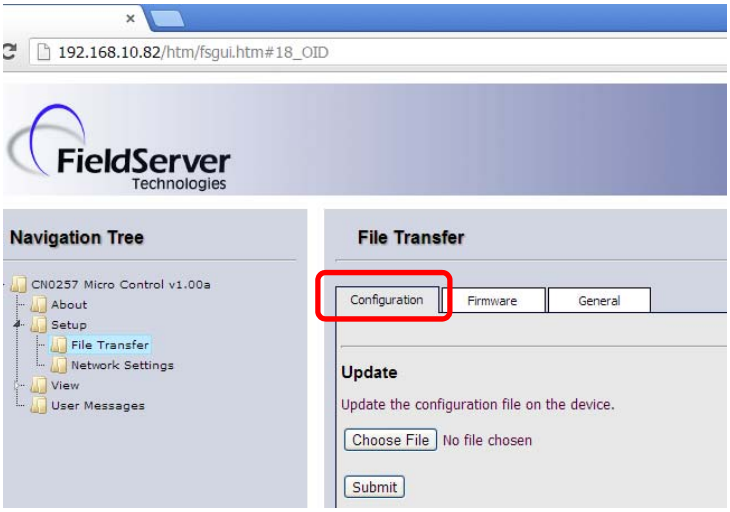
3. You will be prompted with the following page



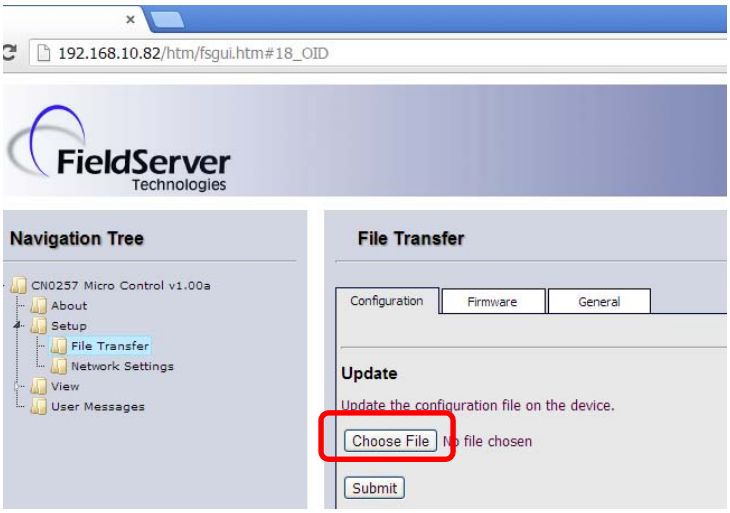
4. Select Setup then select file transfer from the navigation tree on the left



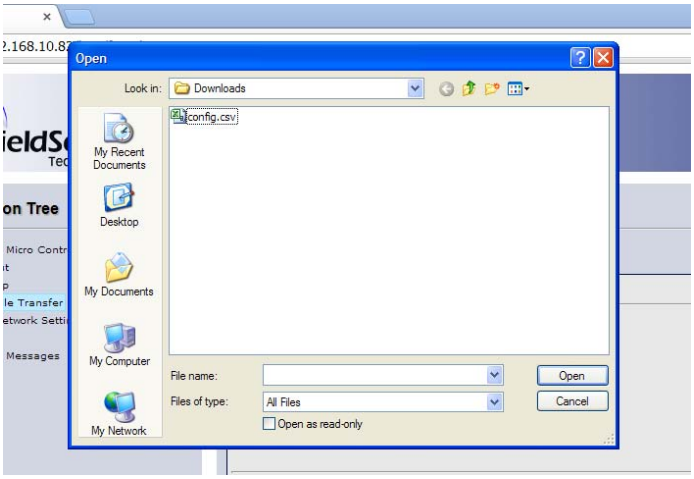
5. The configuration tab should be automatically selected.



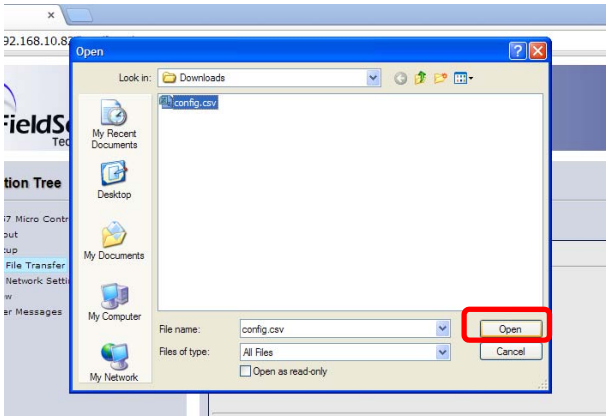
6. Click on the choose file button to browse for the config.csv file.



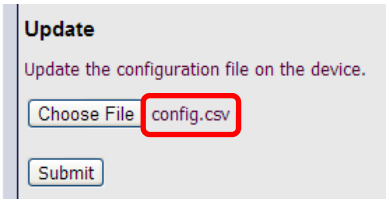
7. You will be prompted with a dialog box to browse for your file.



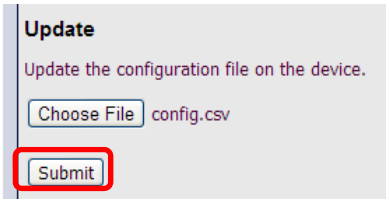
8. Browse for and Select your config.csv file then click on open.



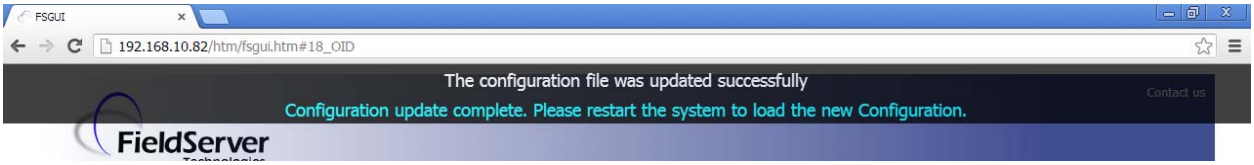
9. You will see the file name next to the chose file button change to “config.csv”



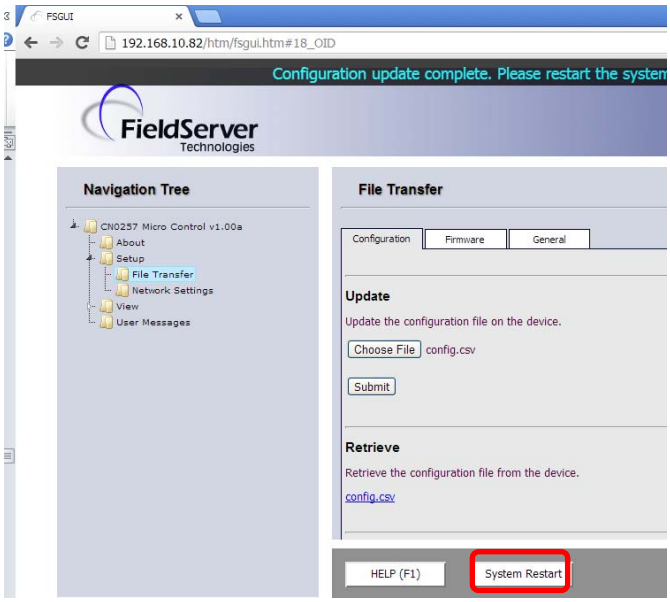
10. Now click on the submit button and the download process will begin.



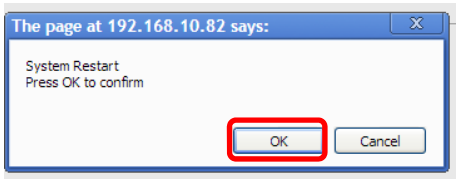
11. After selecting submit you should see the following prompt at the top of your browser



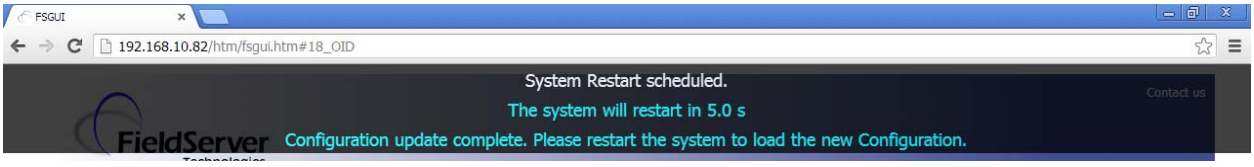
12. Now we must restart the gateway in order for the file download to be complete. Select the "System Restart" button at the bottom of the page.

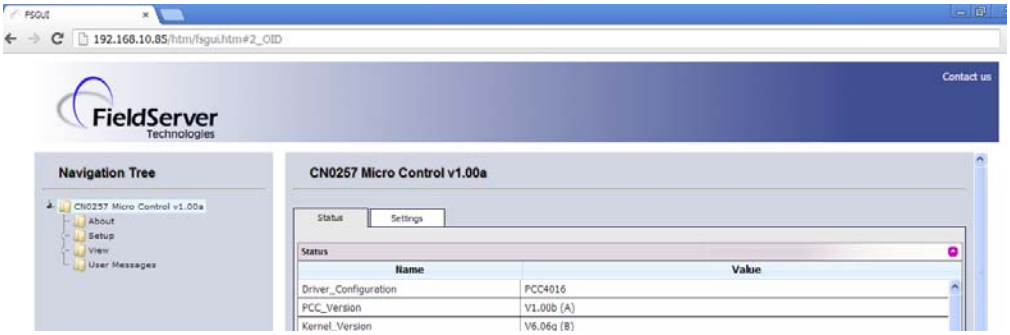


13. You will be prompted with the following box. Select "Ok".

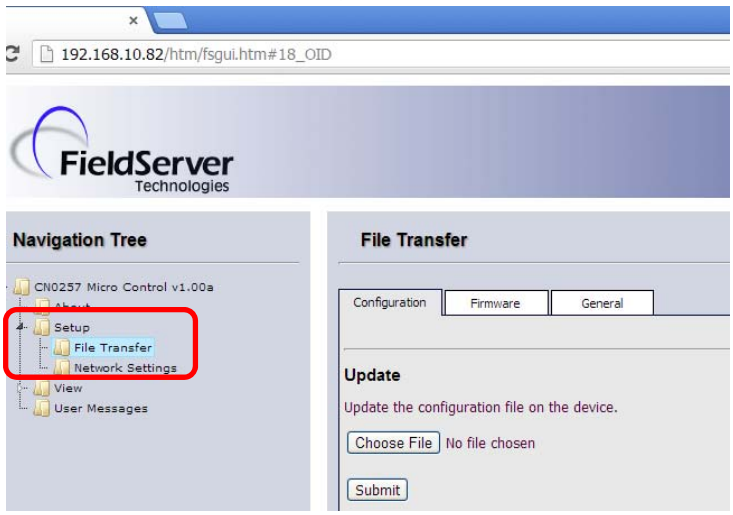


14. You will be prompted with the following message at the top of your browser, wait for the browser to automatically navigate back to the main menu.

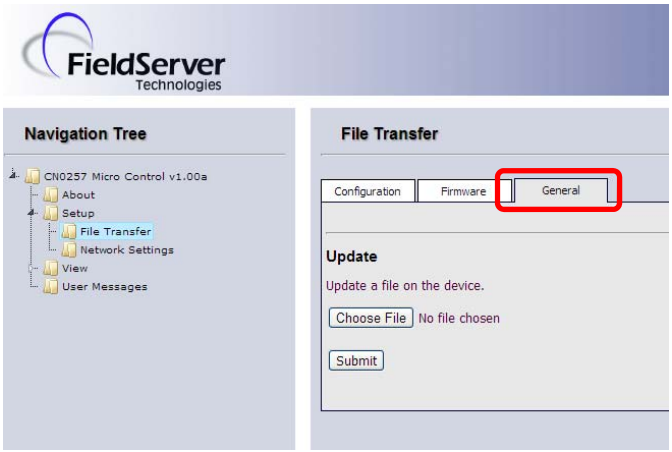




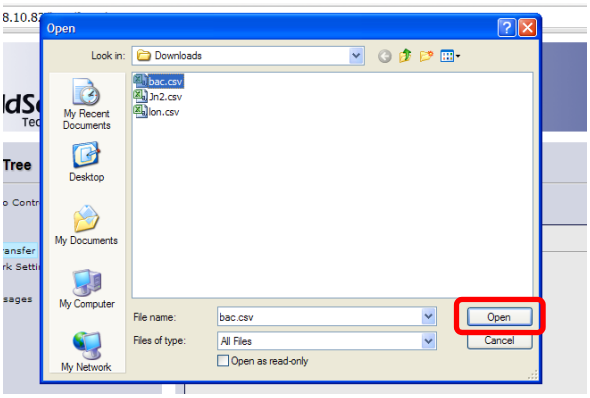
15. Now we are going to download the remaining three configuration files to the gateway card. Select Setup then select file transfer from the navigation tree on the left



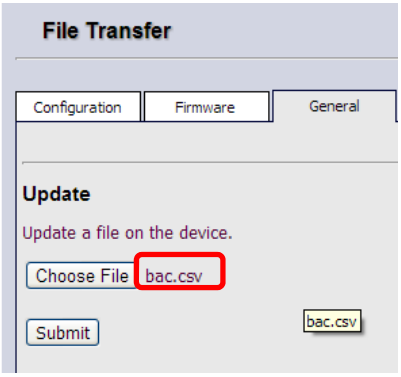
16. Now we are going to download the remaining three configuration files to the gateway card. Select the General tab on the right side of the file transfer page.



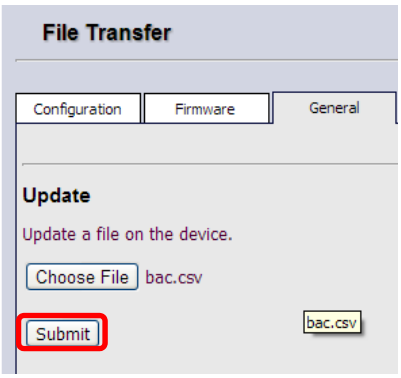
17. Click on the choose file button to browse for the bacnet config file (ex. Bac.csv) and select Open.



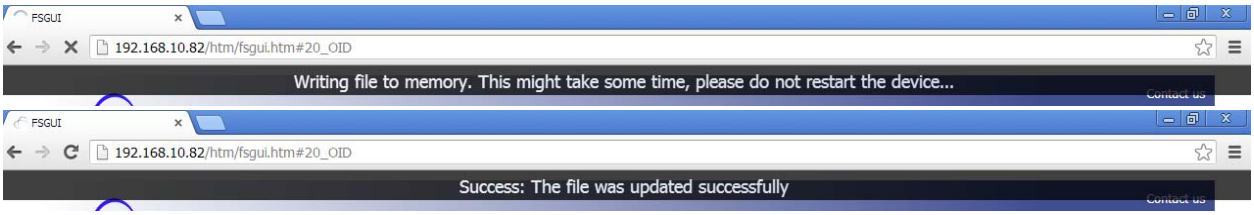
18. You will see the file name next to the “chose file” button change to the name of your csv file (ex.bac.csv)



19. Now click on the “Submit” button.

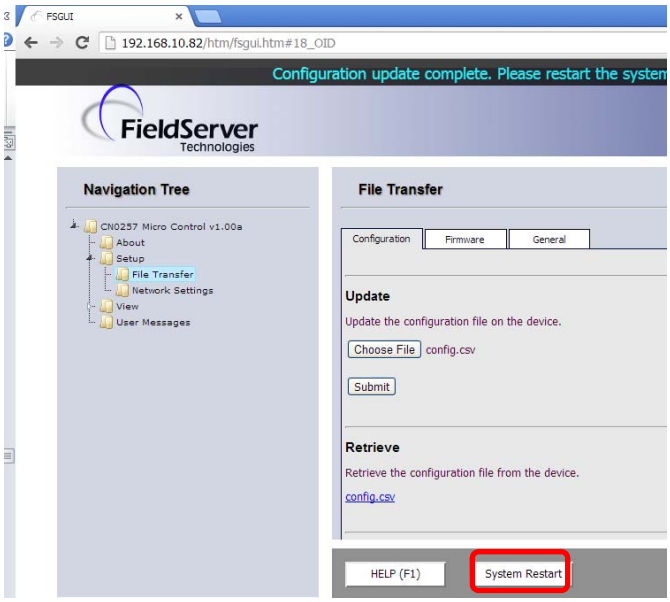


20. After clicking submit you will be prompted with the following messages at the top of your web browser.

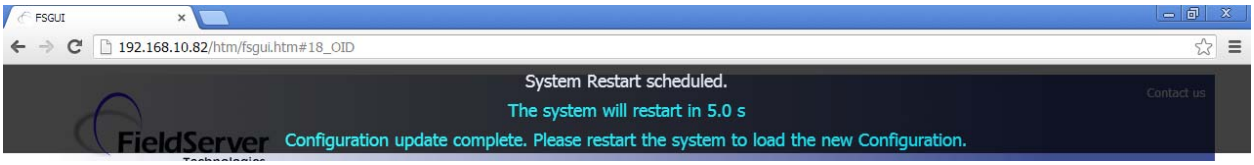

FSGUI
192.168.10.82/htm/fsgui.htm#20_OID
Writing file to memory. This might take some time, please do not restart the device...
FSGUI
192.168.10.82/htm/fsgui.htm#20_OID
Success: The file was updated successfully

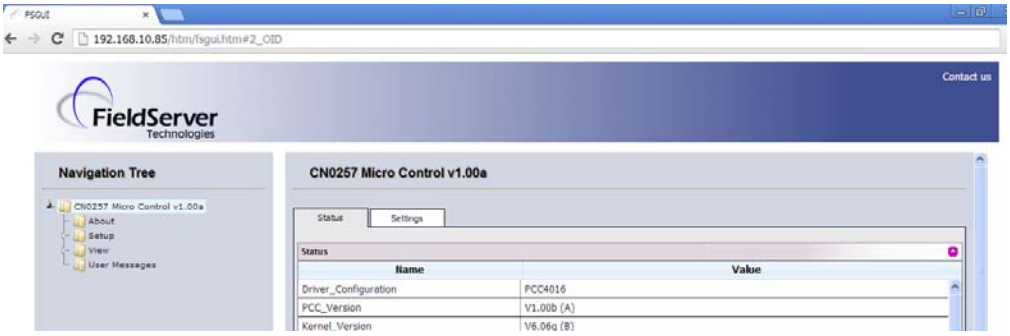
21. Repeat steps 17-20 for the remaining Lontalk and N2 csv files.

22. Once you have completed the download process for the remaining csv files you have to do one more system restart. Select the “System Restart” button at the bottom of the page.



23. You will be prompted with the following message at the top of your browser, wait for the browser to automatically navigate back to the main menu.





24. The download process in now complete.

Method 2 (Programming the MCS-BMS-GATEWAY Via Ruinet Remote User Interface Software)

1. Begin by copying the previously created csv files (See Figure 14) to the Remote User interface configuration folder (Figure 15).

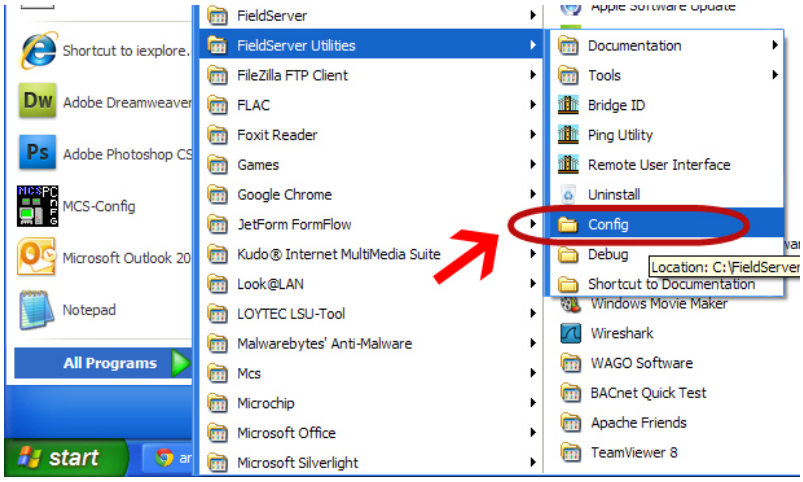


Figure 15 Location to copy CSV Files to

2. Now run the Remote User Interface software

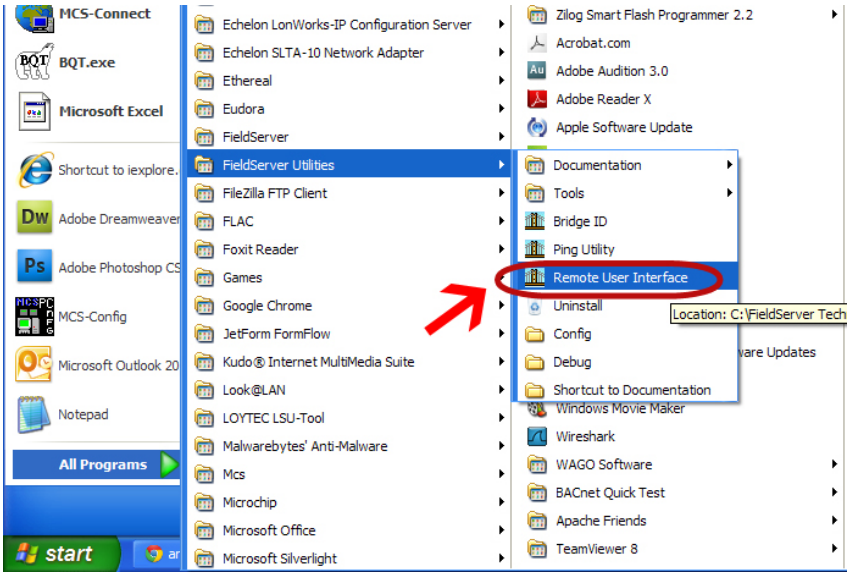


Figure 16 RUINET Software

3. You will then be prompted with one of the following screens (Figure 17)
4. If you are prompted with the screen on the left press "Y' for yes then press any key to continue to the following screen which should look like the right side of (Figure 17).
5. IF you see the image on the right (Figure 17) continue to the next step.

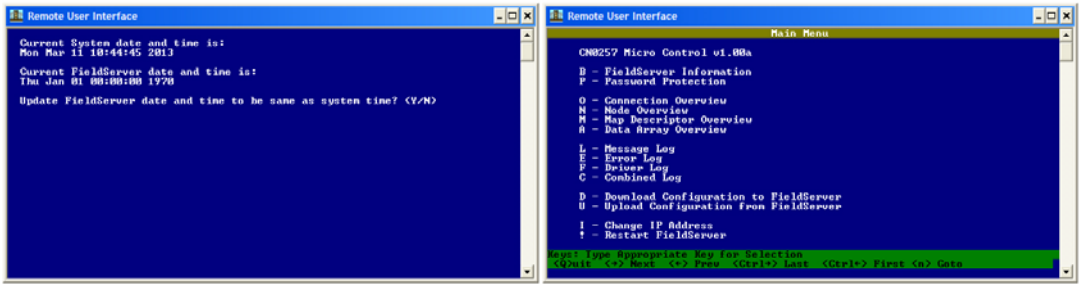

Remote User Interface
Current System date and time is:
Mon Mar 11 10:44:45 2013
Current FieldServer date and time is:
Thu Jan 01 00:00:00 1970
Update FieldServer date and time to be same as system time? (Y/N)
Remote User Interface
Main Menu
CN0257 Micro Control v1.00a
B - FieldServer Information
P - Password Protection
O - Connection Overview
N - Node Overview
M - Map Descriptor Overview
A - Data Array Overview
L - Message Log
E - Error Log
F - Driver Log
C - Combined Log
D - Download Configuration to FieldServer
U - Upload Configuration from FieldServer
I - Change IP Address
! - Restart FieldServer
Keys: Type Appropriate Key for Selection
<Q>uit <→> Next <←> Prev <Ctrl→> Last <Ctrl←> First <n> Goto

Figure 17

6. Now press "D" for Download

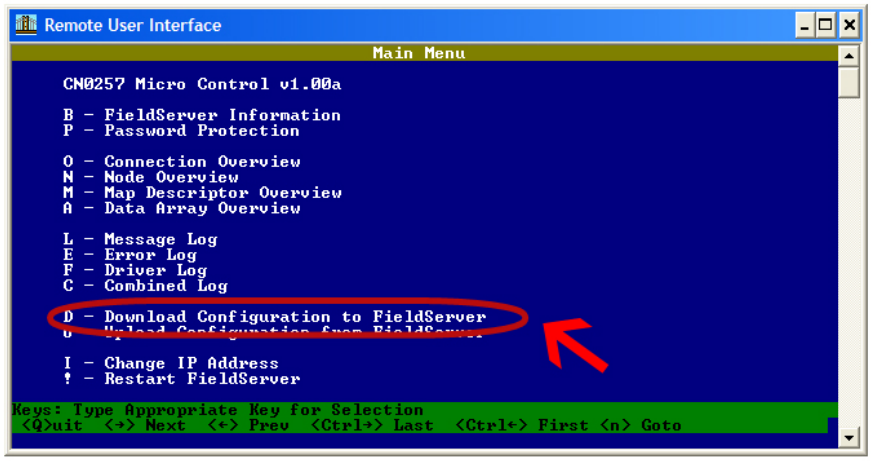

Remote User Interface
Main Menu
CN0257 Micro Control v1.00a
B - FieldServer Information
P - Password Protection
O - Connection Overview
N - Node Overview
M - Map Descriptor Overview
A - Data Array Overview
L - Message Log
E - Error Log
F - Driver Log
C - Combined Log
D - Download Configuration to FieldServer
I - Change IP Address
! - Restart FieldServer
Keys: Type Appropriate Key for Selection
<Q>uit <→> Next <←> Prev <Ctrl→> Last <Ctrl←> First <n> Goto

Figure 18

7. In the next screen you should see three options. Local, Remote, and Download. Next to Local and remote you should have a file with the name config.csv. If so press “D” for download. If not proceed to step 10.

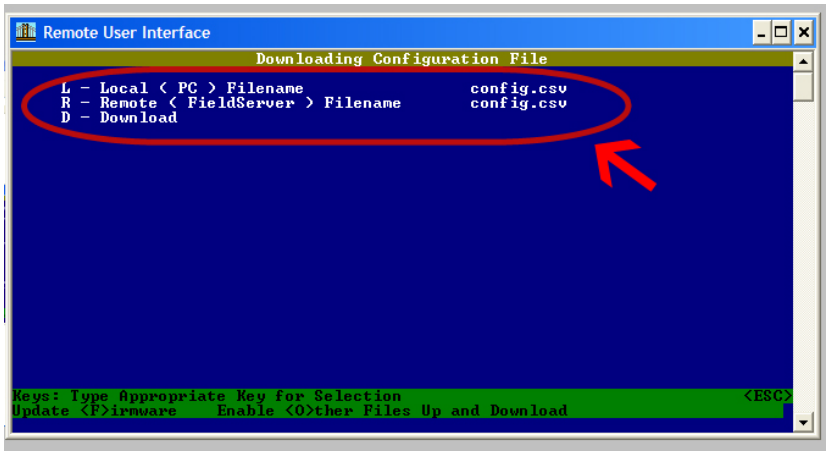

Remote User Interface
Downloading Configuration File
L - Local (PC) Filename config.csv
R - Remote (FieldServer) Filename config.csv
D - Download
Keys: Type Appropriate Key for Selection <ESC>
Update <F>irmware Enable <O>ther Files Up and Download

Figure 19

8. You should see a prompt on the next screen that reads “Download Complete” (Figure 20). Press any key to continue.

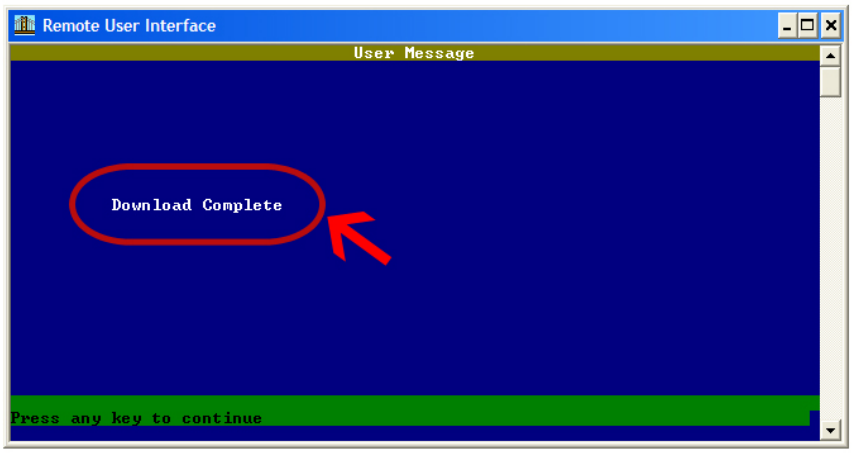


Figure 20

9. You should now be taken back to the “Download Configuration File” screen. Now press “O” and you should see the following prompt (Figure 21). Press any key to continue.

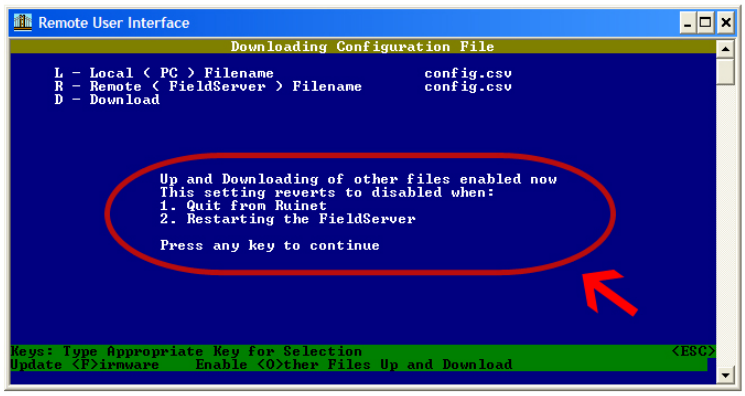

Remote User Interface
Downloading Configuration File
L - Local (PC) Filename config.csv
R - Remote (FieldServer) Filename config.csv
D - Download
Up and Downloading of other files enabled now
This setting reverts to disabled when:
1. Quit from Ruinet
2. Restarting the FieldServer
Press any key to continue
Keys: Type Appropriate Key for Selection <ESC>
Update (F)irmware Enable (O)ther Files Up and Download

Figure 21

10. Now press “L” and you should be prompted with the type Entry at the bottom of the page. Type in the name of the file you are trying to download (ex. Config.csv from step 7) then hit enter.

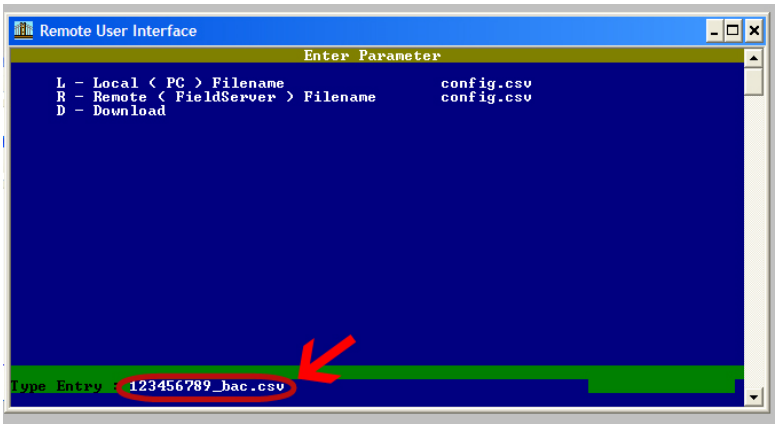

Remote User Interface
Enter Parameter
L - Local (PC) Filename config.csv
R - Remote (FieldServer) Filename config.csv
D - Download
Type Entry : 123456789_bac.csv

Figure 22

11. The file name next to local should have changed to the new entry.

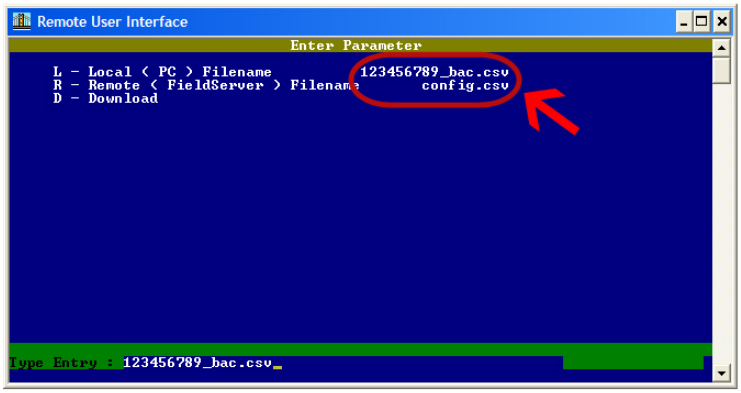

Remote User Interface
Enter Parameter
L - Local (PC) Filename 123456789_bac.csv
R - Remote (FieldServer) Filename config.csv
D - Download
Type Entry : 123456789_bac.csv

Figure 23

12. Now press “R” and you should be prompted with the type Entry at the bottom of the page. Retype the name of the file you are trying to download then hit enter.

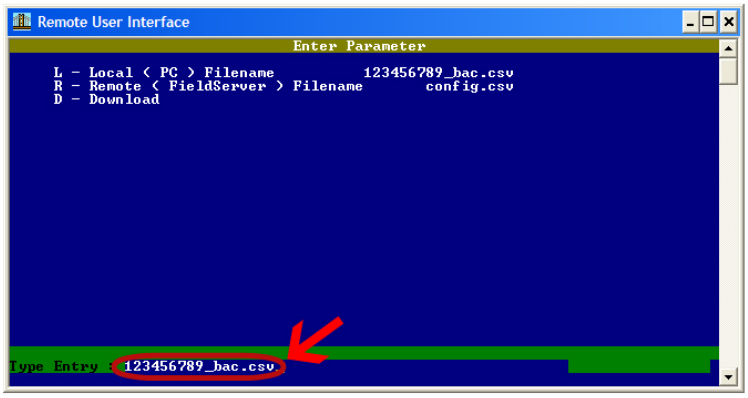

Remote User Interface
Enter Parameter
L - Local (PC) Filename 123456789_bac.csv
R - Remote (FieldServer) Filename config.csv
D - Download
Type Entry : 123456789_bac.csv

Figure 24

13. The filenames next to “Local” and “Remote” should be identical. Press “D” for download.

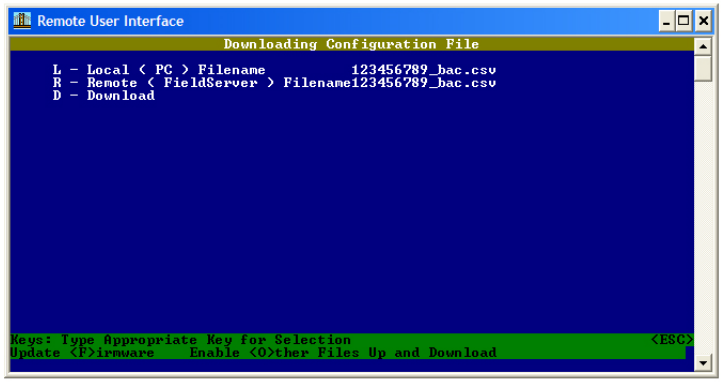

Remote User Interface
Downloading Configuration File
L - Local (PC) Filename 123456789_bac.csv
R - Remote (FieldServer) Filename123456789_bac.csv
D - Download
Keys: Type Appropriate Key for Selection <ESC>
Update <F>irmware Enable <O>ther Files Up and Download

Figure 25

14. You should see a prompt on the next screen that reads “Download Complete” (Figure 26). Press any key to continue. **Repeat this step for all four of your CSV files**.

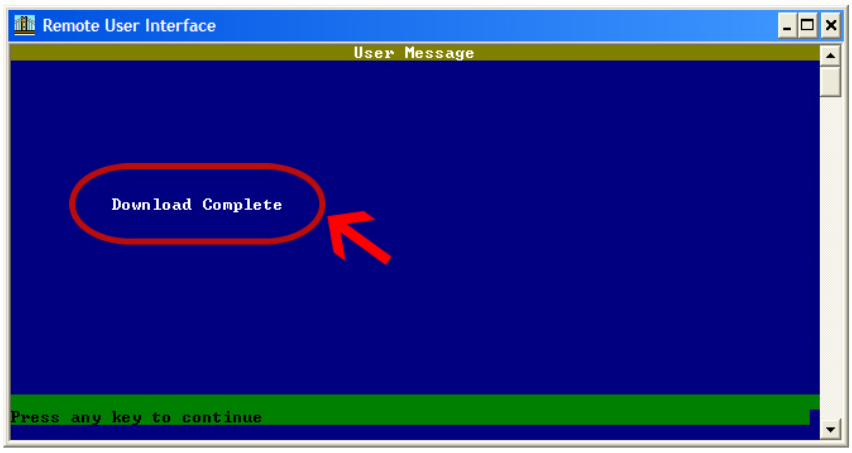


Figure 26

15. Once you have downloaded all your files press escape to be taken back to the main menu. While in the main menu press and hold the SHIFT key. While **Holding** the SHIFT key press the number 1.

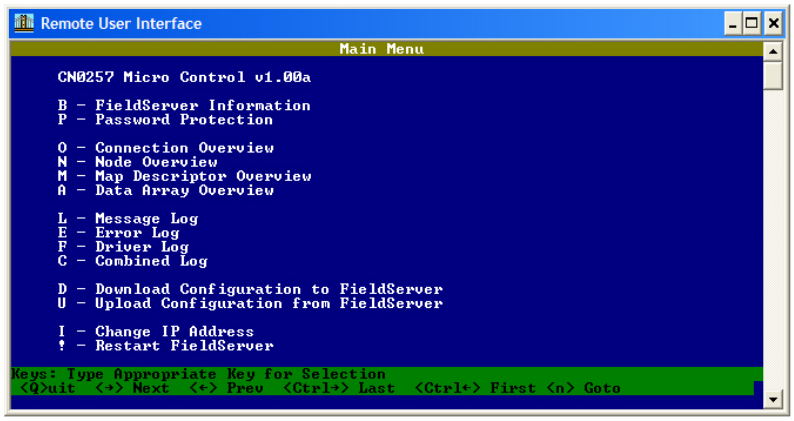

Remote User Interface
Main Menu
CN0257 Micro Control v1.00a
B - FieldServer Information
P - Password Protection
O - Connection Overview
N - Node Overview
M - Map Descriptor Overview
A - Data Array Overview
L - Message Log
E - Error Log
F - Driver Log
C - Combined Log
D - Download Configuration to FieldServer
U - Upload Configuration from FieldServer
I - Change IP Address
! - Restart FieldServer
Keys: Type Appropriate Key for Selection
<Q>uit <+> Next <-> Prev <Ctrl+> Last <Ctrl-> First <n> Goto

Figure 27

16. You should now see a prompt that says “Field Server Bust Restarting . . . .”

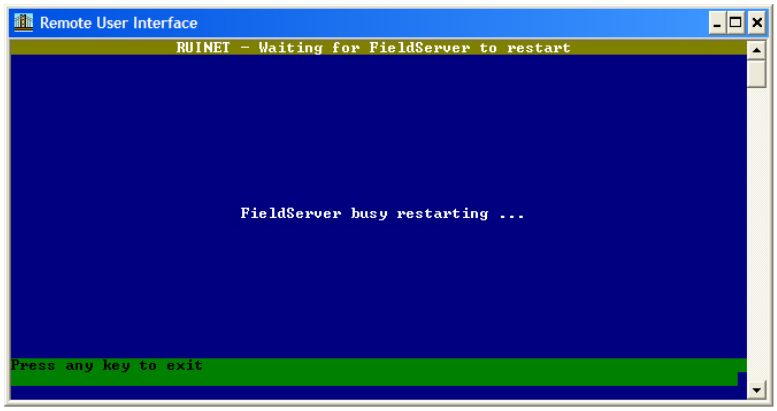


Figure 28

17. You will prompted with the following screen (Figure 30) press “Y’ for yes then press any key to continue . You will be taken back to the Main menu. The download process is now complete.

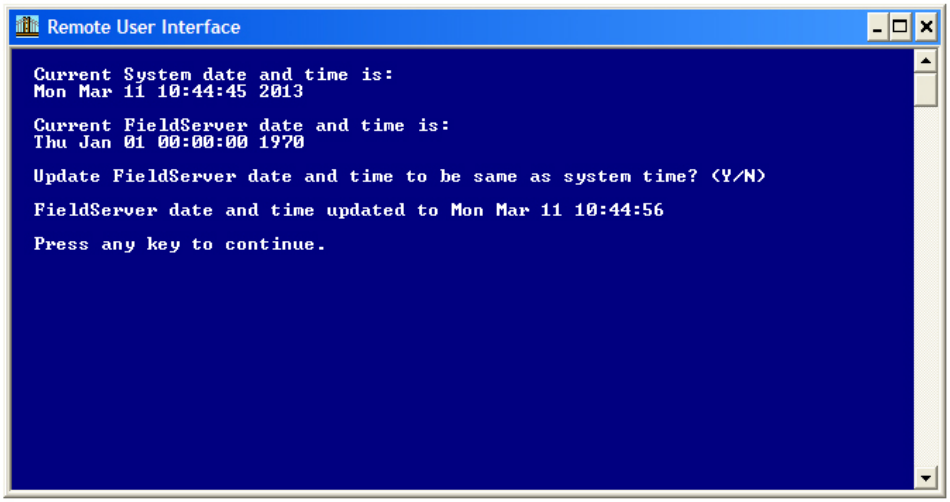

Remote User Interface
Current System date and time is:
Mon Mar 11 10:44:45 2013
Current FieldServer date and time is:
Thu Jan 01 00:00:00 1970
Update FieldServer date and time to be same as system time? (Y/N)
FieldServer date and time updated to Mon Mar 11 10:44:56
Press any key to continue.

Figure 29

18. The final step is to verify you have no errors. Once your back to the Main menu press “E” for errors.

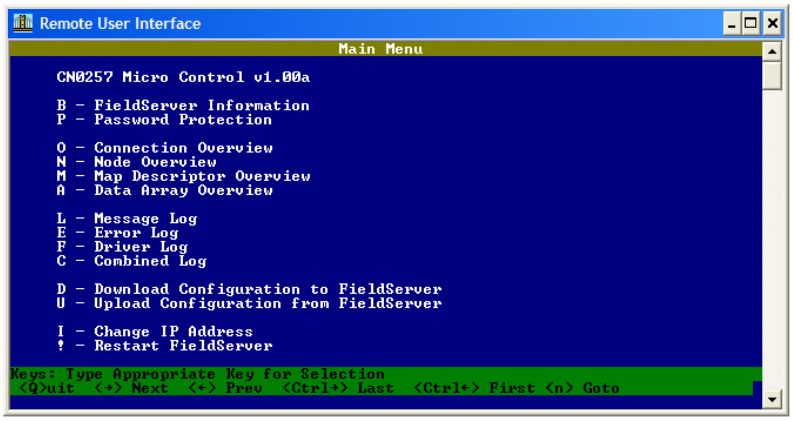

Remote User Interface
Main Menu
CN0257 Micro Control v1.00a
B - FieldServer Information
P - Password Protection
O - Connection Overview
N - Node Overview
M - Map Descriptor Overview
A - Data Array Overview
L - Message Log
E - Error Log
F - Driver Log
C - Combined Log
D - Download Configuration to FieldServer
U - Upload Configuration from FieldServer
I - Change IP Address
! - Restart FieldServer
Keys: Type Appropriate Key for Selection
<Q>uit <→> Next <←> Prev <Ctrl→> Last <Ctrl←> First <n> Goto

Figure 30

19. You should have a “No errors” prompt (See Figure 31). The download process is now complete.

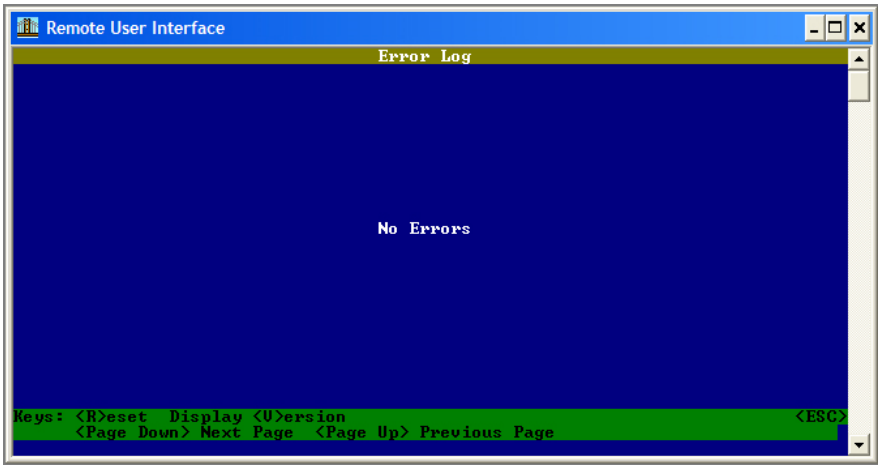


Figure 31

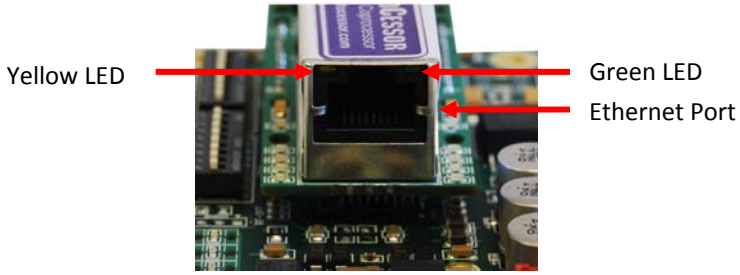
Appendix A. Troubleshooting Tips

Appendix A.1. Connecting A PC to the MCS-BMS-GATEWAY

- Confirm that the network cabling is correct
- Confirm that the computer network card is operational and correctly configured
- Confirm that there is an Ethernet adapter installed in the PC's Device Manager List, and that it is configured to run the TCP/IP protocol
- Check that the IP netmask of the PC matches the MCS-BMS-GATEWAY. The Default IP Address of the MCS-BMS-GATEWAY is 192.168.10.85, Subnet Mask is 255.255.255.0, Default Gateway is 192.168.10.1.
  - Go to **Start** > **Run**
  - Type in "ipconfig"
  - The account settings should be displayed
  - Ensure that the IP address is 192.168.10.xxx, the Subnet mask is 255.255.255.0 and the Default Gateway is 192.168.10.1
- Ensure that the PC and MCS-BMS-GATEWAY are on the same IP Network, or assign a Static IP Address to the PC on the 192.168.10. network
- If Using Windows XP, ensure that the firewall is disabled
- Ensure that all other Ethernet cards active on the PC, especially wireless adapters are disabled

Appendix A.2. No communication between the MCS-Magnum and the MCS-BMS-GATEWAY

- Confirm that the network cabling is correct
- Check that the IP address, subnetmask, and the default gateway of the MCS-Magnum match what the label on the MCS-BMS-GATEWAY says it should be set to.
- Check the LED's on the Ethernet port. The yellow LED should be solid yellow the green LED should continuously flash.



Appendix A.3. LED Diagnostics for Lonworks Communications between the MCS-BMS-GATEWAY and device

Note: Please see the diagram below for LED Locations

A.2.1 LonWorks ProtoCessor LED's

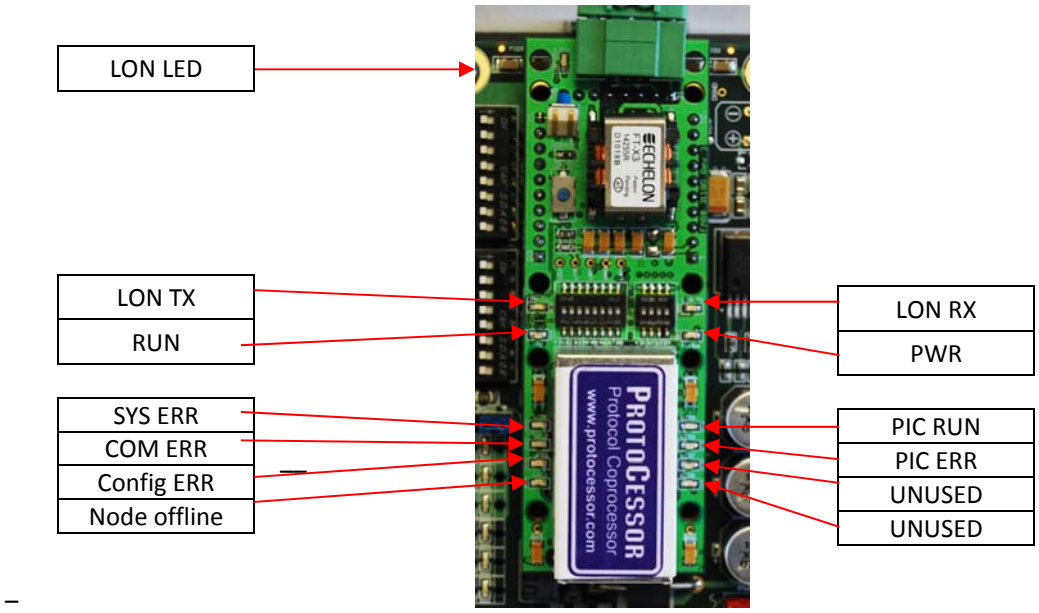


Figure 17 LonWorks ProtoCessor LED's

Light	Description
PWR	This is the power light and should show steady green at all times when the MCS-BMS-GATEWAY MCS-BMS-GATEWAY is powered.
SYS ERR (LED1)	The SYS ERR LED will flash once on power up and flash once 15 seconds after power up. A steady red light will indicate there is a system error on the MCS-BMS-GATEWAY. If this occurs, immediately report the related "system error" shown in the error screen of the RUI interface to Micro Control Systems for evaluation.
COMM ERR (LED2)	The COMM ERR LED will flash once on power up and flash once 15 seconds after power up. A steady red light will indicate a communication error has occurred. To establish the cause of the error, go to the error screen of the RUI interface.
Config ERR (LED3)	The Config ERR LED will flash once on power up and flash once 15 seconds after power up. A steady amber light will indicate a configuration error exists in the active configuration. See the Error Screen in the Remote User Interface for a description of the configuration error.
Node Offline (LED4)	The Node Offline LED will flash once on power up and flash once 15 seconds after power up. If the Node Offline LED stays on solid, a Node Offline condition has occurred.
RUN (PIO)	The RUN LED will start flashing 20 seconds after power indicating normal operation. The MCS-BMS-GATEWAY will be able to access RUINET once this LED starts flashing.
PIC RUN (LED5)	The PIC RUN LED will flash indicating normal operation.

Light	Description
PIC ERR (LED6)	The PIC ERR LED will go on solid indicating there is a PIC error.
LON-TX LED	On normal operation of MCS-BMS-GATEWAY, the TX LED will flash when a message is sent on the Lon port of the MCS-BMS-GATEWAY.
LON-RX LED	On normal operation of MCS-BMS-GATEWAY, the RX LED will flash when a message is received on the Lon port of the MCS-BMS-GATEWAY.
LON-SRV LED (next to Lon port)	The LON-SRV LED will flash if the MCS-BMS-GATEWAY is configured for implicit addressing and not commissioned. LED will be off if the MCS-BMS-GATEWAY is configured for implicit addressing and commissioned or if it is configured for explicit addressing.
LED 7	Not used
LED 8	Not used

Appendix A.4. LED Diagnostics for Bacnet Communications between the MCS-BMS-GATEWAY and device

Note: Please see the diagram below for LED Locations

A.3.1 Bacnet ProtoCessor LED's

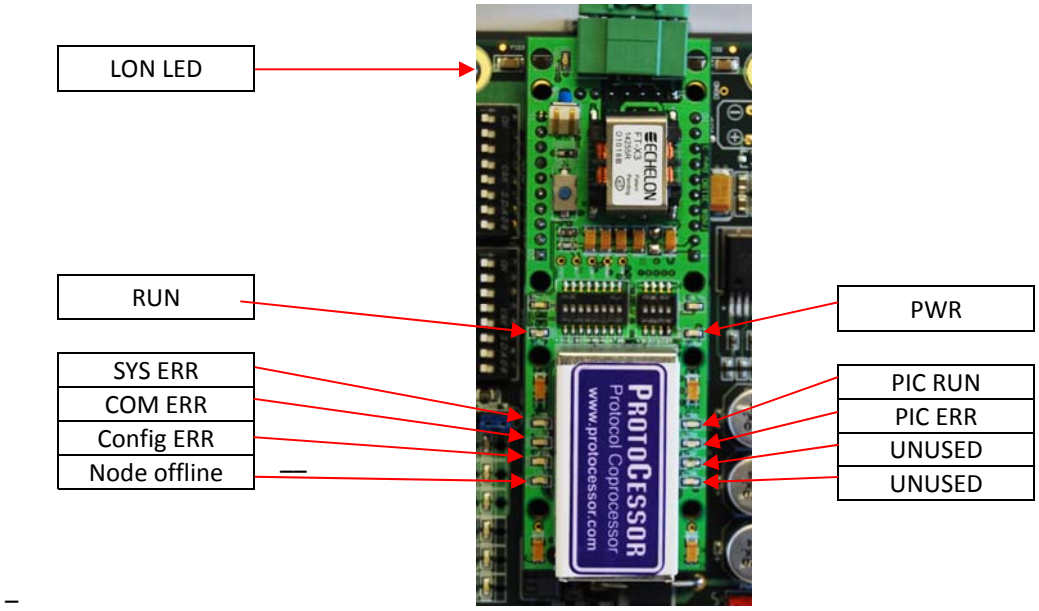


Figure 20 Bacnet ProtoCessor LED's

Light	Description
PWR	This is the power light and should show steady green at all times when the MCS-BMS-GATEWAY MCS-BMS-GATEWAY is powered.
SYS ERR (LED1)	The SYS ERR LED will flash once on power up and flash once 15 seconds after power up. A steady red light will indicate there is a system error on the MCS-BMS-GATEWAY. If this occurs, immediately report the related "system error" shown in the error screen of the RUI interface to Micro Control Systems for evaluation.
COMM ERR (LED2)	The COMM ERR LED will flash once on power up and flash once 15 seconds after power up. A steady red light will indicate a communication error has occurred. To establish the cause of the error, go to the error screen of the RUI interface.
Config ERR (LED3)	The Config ERR LED will flash once on power up and flash once 15 seconds after power up. A steady amber light will indicate a configuration error exists in the active configuration. See the Error Screen in the Remote User Interface for a description of the configuration error.
Node Offline (LED4)	The Node Offline LED will flash once on power up and flash once 15 seconds after power up. If the Node Offline LED stays on solid, a Node Offline condition has occurred.
RUN (PIO)	The RUN LED will start flashing 20 seconds after power indicating normal operation. The MCS-BMS-GATEWAY will be able to access RUINET once this LED starts flashing.
PIC RUN (LED5)	The PIC RUN LED will flash indicating normal operation.

Light	Description
PIC ERR (LED6)	The PIC ERR LED will go on solid indicating there is a PIC error.
LON-LED (next to Lon port)	The LON-LED will flash every second. This LED is N/A when using bacnet protocol.

A.2.3 Main Board LEDs

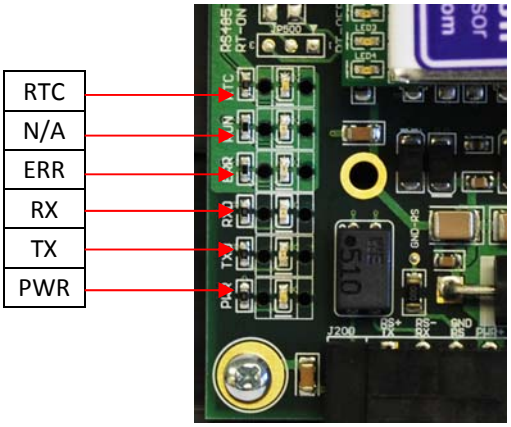


Figure 18 Main Board LED's

Light	Description
ERR	The SYS ERR LED will go on solid 15 seconds after power up. It will turn off after 5 seconds. A steady red light will indicate there is a system error on the MCS-BMS-GATEWAY. If this occurs, immediately report the related "system error" shown in the error screen of the RUI interface to Micro Control Systems for evaluation.
RX	The RX LED will flash when a message is received on the socket port.
TX	The TX LED will flash when a message is sent on the socket port.
PWR	This is the power light and should show steady green at all times when the MCS-BMS-GATEWAY is powered.
RTC	Unused

Appendix B. Reference

Appendix B.1. Specifications

	MCS-BMS-GATEWAY	
Electrical Connections	One 6-pin Phoenix connector, one RS-485 +/- ground port, power +/- frame ground port One 3-pin RS-485 Phoenix connector, one RS-485 +/- ground port One Ethernet-10/100 Ethernet port	One 6-pin Phoenix connector, one RS-485 +/- ground port, power +/- frame ground port One Ethernet 10/100 BaseT port One FTT-10 LonWorks port
Approvals	CE (EN55022;EN55024; EN60950), UL916, FCC Class A Part 15, DNP3 Conformance Tested, OPC Self-tested for Compliance, RoHS Compliant, CSA 205 Approved	
	BTL Marked	LonMark Certified
Power Requirements	Multi-mode power adapter: 9 - 30VDC or 12 - 24VAC	
Physical Dimensions	11.5 cm L x 8.2 cm W x 4.0 cm H (4.5 x 3.2 x 1.6 in.)	
Weight	0.2 kg (0.4 lbs)	
Operating Temperature	-40°C to 75°C (-40°F to167°F)	
Surge Suppression	EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT	
Humidity	5 - 90% RH (non-condensing)	
(Specifications subject to change without notice)		

Appendix B.1.1. Compliance with UL Regulations

For UL compliance, the following instructions must be met when operating the MCS-BMS-GATEWAY.

- The units shall be powered by listed LPS or Class 2 power supply suited to the expected operating temperature range.
- The interconnecting power connector and power cable shall:
  - Comply with local electrical code
  - Be suited to the expected operating temperature range
  - Meet the current and voltage rating for the MCS-BMS-GATEWAY /Net
- Furthermore, the interconnecting power cable shall:
  - Be of length not exceeding 3.05m (118.3”)
  - Be constructed of materials rated VW-1 or FT-1 or better

- If the unit is to be installed in an operating environment with a temperature above 65 °C, it should be installed in a Restricted Access Area requiring a key or a special tool to gain access.
- This device must not be connected to a LAN segment with outdoor wiring.

Appendix B.2. Address DIP Switch Settings

A7	A6	A5	A4	A3	A2	A1	A0	Address
Off	Off	Off	Off	Off	Off	Off	Off	0
Off	Off	Off	Off	Off	Off	Off	On	1
Off	Off	Off	Off	Off	Off	On	Off	2
Off	Off	Off	Off	Off	Off	On	On	3
Off	Off	Off	Off	Off	On	Off	Off	4
Off	Off	Off	Off	Off	On	Off	On	5
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